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199. Test 2 Vc 220 fz 0.17



Materialdata	Toolox 33	Date of tool test: 2011-11-07	
Thickness		68	mm
Hardness in Brinell		275-325	HBW
Hardness in Rockwell		33	HRC
Sträckgräns (Yield strength)		850	MPa
Brottgräns (Tensile strength)		980	MPa
Chargenr. 088248		Löpnr. 7905061	

Machine info

Type of machine	CNC Fadal VMC 4020				
Location for machining	LAB				
Type of toolholder	Mandrel attachment				
Attachment in the machine	ISO 40	Effect on the spindle motor	16,8 kw	Coolant mix	%

Info about the tool

Manufacturer / Distributors		Sandvik Coromant		
Name on the tool		Coromill 490		
Type of milling tool		Shoulder/face mill		
Article number		490-050Q22-14M		
Diameter	∅ 50	Number of teeth on the cutter	4	
Insert code geometry and grade		490R-140408M-PM 1030		
Type of coating		PVD (Physical Vapour Deposition) TiAlN+ TiN		
Kr= Cutting edge angle		90° (Round inserts = depends on ap)		
Range	∅ 20-250 mm	TIP : Avoid positioning of cutter in the center of the work piece, position instead the cutter a bit from the center, 75-80 % of the cutter should be in engagement. (SEE PHOTO)		
Maximal depth of cut	10 mm			

$$Q = \frac{vf \times ae \times ap}{1000}$$

Milling attempt information

$$Tc = \frac{\text{totally milling length}}{vf}$$

Cutting speed (Vc)	220	m/min	Comment: TEST- 2 (Size work piece 500 x 180)
Speed (n)	1401	rpm	The setup was made in double vices.
Table feed (vf)	952	mm/min	After 42 passes with a milled length of 48216 mm
Feed per tooth (fz)	0,17	mm/tooth	is the wear very slight. After 70 passes and with a
Axial depth of cut (ap)	4	mm	run-time on 76,75 min. is the wear still very
Radial depth of cut (ae)	13	mm	slight (See photo). After 98 passes is the wear
Effective cutting diameter (De)	50	mm	Slightly bigger than after 70 passes. I stopped the
Maximum chip thickness (hex)	0,15	mm	attempt after 112 passes and with a total
Runtime (Tc)	115,29	min	run-time on 115,29 min. (see photos)
Totally milling length	109760	mm	
Nr. of cutting edges on the insert	4	st	
Metal removal rate (Q)	49,5	cm ³ /min	
Cost of the milling tool	3500	SEK	
Cost for one insert	129	SEK	$fz = \frac{hex}{\sin kr}$

4 photos after 70 passes (run-time 76,75 min)



4 photos after 112 passes (run-time 115,29 min)

